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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,213	03/31/2004	William H. Simendinger III	9248-6	6014

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EXAMINER
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ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/814,213

Applicant(s)

SIMENDINGER ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 11-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 8, 16-22 is/are rejected.
- 7) ☒ Claim(s) 3-7, 9 and 11-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04/22/05</u>  | 6) <input type="checkbox"/> Other: _____                                    |

### ***Specification***

The Examiner's objections to the Specification have not at all been suitably addressed by Applicant's response. Indeed, there have been no changes to the Specification that would alleviate the Examiner's concerns regarding the apparent conflicts in the disclosure of the invention.

In addition to the inconsistencies pointed out in the correspondence dated January 4, 2005, it has been noted that page 2, lines 13-21 of the Specification suggest that a titanium chelate compound equivalent to that disclosed in the example is used to "crosslink" the glassy matrix where glassy matrix is assigned the meaning provided at the bottom of page 1. By contrast, this compound seems to be used as a modifier in Example 1 that appends to the ends of the silanol-terminated polydimethylsiloxane, not as a catalyst for crosslinking an alkoxy-functional siloxane and a "functionally-terminated siloxane". This is an important distinction because catalysts are not integrated into a reaction product but, rather, merely lower the energetic barrier to reaction involving one or more reactants. In the Example, the titanium chelate is apparently a reactant.

The Examiner appreciates Applicant's invitation to provide suggestions as to how the application might be amended to adequately respond to the matters raised during this prosecution but the Specification contains conflicting ideas in so many places as to make it difficult to recommend brief solutions. In the Examiner's view, wholesale changes are needed to homogenize the ideas conveyed by the Specification.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 16-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant has amended the claims such that step (b) entails mixing the materials combined in step (a) with an alkoxy-functionalized siloxane and a terminally-terminated silane or siloxane. It is Applicant's position that, in amending claim 16 in the aforementioned fashion, the claimed method is now consistent with the method outlined in the Examples. The Examiner disagrees.

In step 2 of Example 1, silanol-terminated polydimethylsiloxane is "mixed" with a titanium compound. In carrying out this action, the silanol groups are said to be "terminated", which the Examiner supposes is intended to mean that they are reacted with the titanium compound thereby forming a new polydimethylsiloxane bearing a titanium-based terminal group in place of the original silanol groups. It is notable, however, that whereas method claim 16 recites a step (b) wherein all of the silsesquioxane, alkoxy-functionalized siloxane, and a functionally-terminated siloxane are "mixed" together, Example 1 states that the functionally-terminated siloxane is kept

separated from the mixture of POSS/TIPO reaction product and alkoxy-functionalized siloxane so as to provide a two-part composition. Example 2 differs from Example 1 only in that POSS and TIPO are merely mixed together, rather than reacted with one another, prior to being combined with the alkoxy-functional siloxane.

Furthermore, page 2, lines 25-27 suggest that it is not within the purview of the originally disclosed invention to react all of the materials together at once:

“In operation, the glassy matrix and the polymethylsilsesquioxane are crosslinked or catalyzed separately so as to avoid premature gelation of the product prior to use.”

This passage would appear to indicate that the polymethylsilsesquioxane/crosslinker mixture is not even considered part of the glassy matrix, though it is acknowledged that the phrase “glassy matrix” seems to take on different meanings in different parts of the Specification which is part of what makes Applicant’s description so convoluted, and represents a direct conflict with Applicant’s assertion in their Remarks section that the glassy matrix may be formed by reacting all materials at once.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Recited as embodiments of the alkoxy-

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functionalized siloxane are "tetramethoxysiloxane" and "tetraethoxysiloxane". The Examiner is uncertain as to what is meant by these identifiers. Is Applicant referring to polysiloxanes having any possible structural orientation provided that they contain 4 ethoxy- or methoxy groups? A stronger possibility is that Applicant is referring to the well known materials tetramethoxysilane and tetraethoxysilane in which case these are not siloxane polymers at all but, rather, precursors of a polyalkoxysiloxane. Clarification is required.

### ***Claim Suggestion***

Insofar as it is understood that, at some point in time, the two parts (A and B) outlined in Example 1 will be combined, it is submitted that Applicant might amend claim 16 to recite a method comprising (i) preparing a functionally-terminated silane/siloxane, (ii) dissolving/reacting polymethylsilsesquioxane in a crosslinking agent, (iii) mixing an alkoxy-functionalized siloxane with the mixture/product of step (ii), and (iv) adding to the mixture prepared in step (iii) the functionally-terminated siloxane produced in step (i). This sequence more closely adheres to the method set out in the Examples than does the subject matter of presently amended claim 2. Applicant is further encouraged to disclose *how* the functionally terminated siloxane is made.

### ***Claim Analysis***

Applicant is advised that, while it is perhaps their intent for the "functionally-terminated siloxane or silane" to be equated with the reaction product derived from a silanol-functionalized polysiloxane and a titanium compound as is disclosed in Example 1, the claim does not read this narrowly and, in fact, would encompass the silanol-

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functionalized polysiloxane, which Applicant has stated is unsuitable for the practice of their invention because it reacts too quickly with the POSS/TIPO mixture.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishii et al., JP 60-254034. In the last correspondence, the Examiner had stated that this reference was not especially germane for the reason that a crosslinking agent had not been disclosed. It is now appreciated that the Examiner had viewed the claims far too narrowly, not realizing their full breadth. Nishii, again discloses an organosilsesquioxane and a polydialkoxysiloxane wherein both are functionally-terminated, one with hydroxy groups, the other with alkoxy groups. As for the crosslinking agent, insofar as the alkoxysiloxane polymer has functional groups at each end is obviously to be reacted with the silsesquioxane polymer, it follows that the former will crosslink the latter.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeda et al., U.S. patent # 4,510,283 for much the same reasons. Like Nishii, discloses a polymer equivalent to a polyalkoxysilane, i.e. the tetra(m)ethoxysilane condensate, and a hydroxyl group-terminated polysilsesquioxane.

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Claims 3-7 and 11-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Although these claims mention materials as ubiquitous as fumed silica and iron oxides, the aforementioned disclosures fail to make even cursory mention of fillers or other adjuvants.

This action will not be made final because the art rejections could have been made in the previous stage of prosecution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 27, 2005

*Mark Zimmer*  
Mark Zimmer  
AU 1712